

NOTES ON *NEUROPTERA* AND DESCRIPTIONS OF  
NEW SPECIES.

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(Plate xx.)

Very little attention has been given to the small things among Australian insects, until the last few years, in any of the Orders outside the Coleoptera and Lepidoptera; so that when one is working at Economic Entomology and has to know something about the more obscure groups, one is frequently coming across strange insects overlooked by the specialist. This is very noticeable in such an anomalous Order as the *Neuroptera*, which until the late Robert McLachlan took up the study of their habits, had almost been passed over by English entomologists.

I now record the discovery of two members of the Family *Embiide*, hitherto unknown in Australia; and a second species of the Family *Nemopteridæ*, the only other one known having been described by Westwood over fifty years ago.

Family EMBIIDÆ.

The exact location of these curious little insects is still somewhat uncertain. Sharp places them in the second family of the Neuroptera, next to the Termites. Redtenbacher brackets them between the latter and the Blattidæ; but McLachlan doubts whether they are related to the Termites; while Wood-Mason calls them Orthopterous insects. Grassi, after working out their anatomy, leaves them midway between the two Orders, and considers that they should be raised into a separate Order. Hagen considers that they are more closely related to the Termites than to any other family, but show affinity to the Psocidæ. Latreille

formed the Genus *Embia*, now typical of the family, in 1825, briefly dismissing it with the following remark, "Voisin du précédent (Termes) mais à antennes différentes." Westwood defined the family in 1837, and gave the characters of the genera, describing the two known species *Embia savignii*, Latr., which the author described from a specimen first figured in Savigny's great work,\* and another that he called *Oligotoma saundersi*, from India, discarding Grey's genus *Olyntha* as a synonym of *Embia*. Lucas described the next species from Algeria in 1849 under the name of *Embia mauritanica*. In 1876 M. Michael gave an interesting account of the habits of an insect found upon the roots of his orchids in Scotland, probably introduced with the plants from India, which produced silken webs like spiders; this was published in the Gardeners' Chronicle, illustrated with his drawings, and some notes by Westwood. McLachlan subsequently described it scientifically after its discoverer, with two other species from South America collected by Bates in 1878. Wood-Mason gave an account of the life-history of *Oligotoma saundersi*, common in India under stones, and discussed the wing-structure of the insects, in 1883. In the same year McLachlan described a species, collected in the roofs of the native houses in Hawaii by Blackburn, under the name of *Oligotoma insulans*; an interesting account of its life-history has since been furnished by Perkins, who says it is a very common insect, the males winged and the females apterous, living in silken webs under bark or stones. Grassi in 1893 studied the habits and anatomy of two species found under stones in Southern Europe. Hagen monographed the family in 1885, recording 17 species.

OLIGOTOMA GURNEYI, n.sp. (Plate xx., figs. 2-3.)

Length of body 7; across outspread wings 17 mm.

General colour dull chocolate-brown, wings variegated with pale parallel lines.

Head large, rounded, longer than broad, turned down in front; eyes circular, projecting on the sides; antennæ in front of the

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\* Description de l'Égypte Névropt. pl. 2, f. 9.

eyes, cylindrical basal joint stout, from behind the eyes head broadly rounded to apex. Prothorax not as broad as head, swelling out in line with base of forewings and of uniform thickness to hind pair. Wings of the usual elongate form, parallel on the costal margin, narrowly rounded at the tips. All the segments of the legs swollen, hairy on the tibiæ and tarsi. Abdomen elongate [damaged].

*Hab.*—Sydney, N.S.W.; taken round the lamp in the house, 6 : x. : '02 (W. B. Gurney).

*OLIGOTOMA AGILIS*, n.sp. (Plate xx., figs. 4-6.)

Length 12 mm.

General colour ferruginous mottled with dull yellow; mouth-parts and tarsi of fore legs lighter; the whole insect clothed with short scattered black hairs.

Head very large, half as long as thorax, convex, rounded; antennæ standing out in front of eyes, 9-jointed [apparently mutilated], 1st broadest, cylindrical; 3rd longer than 2nd, the next moniliform, gradually increasing in size to the tip: eyes small, not projecting, coarsely faceted, irregularly reniform. Thorax not quite as long as abdomen, divided into three distinct segments, the central or mesonotum longest; wings wanting; fore legs with femora at tibia thickened, the 1st tarsal joint dilated into a broad round disc, flattened beneath and impressed with a median parallel suture; 2nd tarsal joint small, coming to a point at apex, and furnished with small sharp claws; middle legs not so robust; hind pair with the femora thickened, and the tarsi formed of two large joints terminating in large tarsal claws. Abdomen of uniform circumference, apparently composed of ten segments when viewed from above, but the 9th (much smaller than the rest) appears to form a part of the 10th when viewed from the side, rounded at the extremity. Anal tubercles large, finger-shaped, two-jointed, standing out on the sides.

Bomen, Wagga, N.S.W; two specimens taken under stones in April.

They are active little creatures, hiding in the dust when disturbed.

#### Family NEMOPTERIDÆ.

Some writers place these insects in a subfamily of the *Hemerobiidæ*, but others rank them as a distinct family. Klug included all the known species in 1836 in the genus *Nemoptera*; but Rambur in 1842 divided them up into three well defined genera—(1) *Nemoptera* for the black and yellow forms, with the mouth strongly produced into a beak; (2) *Halter*, comprising species with transparent forewings, long slender hind ones, more or less dilated at the tips, and the mouth produced into a beak; (3) *Brachystoma*, containing a single hyaline species, in which the mouth is short in front. In 1844 Westwood placed them in two groups according to the dilation or otherwise of the hind wings, and in 1885 McLachlan added the genus *Croce* to contain those with filiform hind wings. Kirby, cataloguing the family in 1900, divided them up into seven genera containing 33 species, all of which, with two exceptions, are confined to the old world, extending from the Mediterranean region of Southern Europe to Africa on the one side, and Asia into India on the other; of these species, 14 are represented in the British Museum. *Stenorrhachus walkeri*, discovered on the Chilian coast by Mr. J. J. Walker, was described by McLachlan in 1885; and *Chasmoptera hutti*, Westwood, was captured on the edge of a swamp near the town of Guilford, Western Australia, in 1847.

I place my species in the genus *Croce* formed by McLachlan, who defined it as follows—"Of small size, characterised by the front being very strongly produced into a slender beak, by short antennæ (which are usually somewhat thickened towards the apex), by transparent anterior wings with very open neuration, and usually with a strongly-defined pterostigmatic mark, and especially by long setaceous posterior wings, strongly ciliated, in which even the rudiments of neuration are scarcely to be traced."

*C. attenuata* agrees in all particulars, except the cilia, but these appear to have existed and to have been detached through being placed in spirits or rubbed in transit.

## CROCE ATTENUATA, n.sp. (Plate xx., fig. 1.)

Length of outspread wings 25; of hind wings 27; of body 10mm.

General colour purplish-brown; head, except eyes and sides of prothorax, yellow; meso- and metathorax mottled with the same colour; legs light yellow; forewings transparent, costa tinged with yellow, nervures black, hind wings light brown; abdomen variegated with yellow markings.

Head large, elongated in front; eyes large, rounded, projecting on the sides; antennæ situated between fore margin of the eyes, erect, curving round. Prothorax elongate, cone-shaped, narrow at junction with head, lightly clothed with short bristles on the sides, meso- and metathorax lobed, together broadly rounded. Forewings large, nearly straight on costal edge, sharply curved round near the tips; hind wings thread-like, extending out beyond tip of abdomen, flattened on the upper surface, composed of three stout parallel nervures running close beside each other, showing traces of scales along the edges. Abdomen elongated, narrow, rounded at the tip.

*Hab.*—Pajingo Station, Charters Towers, N.Q. (Mrs. Black).

This insect was received from Mrs. Black with a number of other specimens in a bottle of spirits of wine; and carefully dried and mounted on card.

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## EXPLANATION OF PLATE.

- Fig. 1.—*Croce attenuata*, n.sp.  
 Fig. 2.—*Oligotoma gurneyi*, n.sp.  
 Fig. 3.— „ „ wing, showing veins.  
 Fig. 4.—*Oligotoma agilis*, n.sp.  
 Fig. 5.— „ „ tarsus of hind leg.  
 Fig. 6.— „ „ tarsus of fore leg.